

A study of the number of pistils in the Colorado Blue
Columbine, *Aquilegia caerulea*

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In the classes in the taxonomy of the flowering plants it was noted that the Colorado Blue Columbine was not constant in the number of pistils, and the following investigation was undertaken to formulate some conclusions concerning this point. Inspection of the keys shows agreement on the number of pistils given for the genus *Aquilegia*, but our findings do not agree, except in part as noted below, with the number as recorded for this genus. Gray (1887), Wood (1889), Dana (1895), Britton (1901), Stevens (1902), Nelson (1903), Coulter and Nelson (1909), Nelson (1912), Clements and Clements (1917), Bailey (1920), Rydberg (1922), and Blanchan (1926) all give "pistils five" for the genus.

Two regions quite widely separated were chosen for this study in order to determine if the environmental influences played any part in the lack of constancy in the number of pistils. The majority of flowers examined were found in the Uncompahgre Forest Reserve, southwest from Delta, Colo., and the others were examined from Pinion Mesa near the Fruita Reserve, southwest of Grand Junction, Colo. In the Uncompahgre Forest a variety of locations as to soil and moisture was chosen, such as head of Cushman canyon, upper Cushman canyon, various places in the canyon, along the Nucla road, and by Blue Creek. The counts on Pinion Mesa were made from the typical mountain hillside conditions.

The blue columbine may have as many as three or four main stems. In the counts each stem was listed separately and the lower blossoms and unopened buds were counted first and the the number of pistils recorded for each as they appeared in an ascending order. On Pinion Mesa a total of thirty-five plants with one hundred forty-six flowers were examined and counted, and in the Uncompahgre Forest one hundred fifty-seven plants with seven hundred thirty-seven flowers.

The number of pistils as counted in the eight hundred eighty-three flowers appears below.

Number of flowers with three pistils.....	1; per cent	0.12
Number of flowers with four pistils.....	11; per cent	1.25
Number of flowers with five pistils.....	197; per cent	22.3
Number of flowers with six pistils.....	422; per cent	47.78
Number of flowers with seven pistils.....	214; per cent	24.23
Number of flowers with eight pistils.....	36; per cent	4.08
Number of flowers with nine pistils.....	1; per cent	0.12
Number of flowers with ten pistils.....	1; per cent	0.12

It will be noted above that only one hundred ninety-seven of the flowers examined have five pistils as listed for the genus *Aquilegia*. The larger portion, four hundred twenty-two, have six pistils and one had as many as ten pistils.

Of the one hundred ninety-two plants examined six had a constant number of five pistils for every flower on the plant; nine had a constant number of six pistils; and one had a constant number of seven. The remaining one hundred seventy-six had flowers with a varying number of pistils; for example, a plant from Cushman canyon had eleven flowers with pistil numbers of six, five, seven, six, on one main stem; five, seven, five, five, on another, and six, five, five, on another.

As far as could be determined by this study, the location, such as rocky hillside, aspen grove, swampy island, did not have any effect in the number of pistils, nor could any differences as to pistil number be noted between smaller and larger plants.

Attempt has been made through the study of sections of anthers and ovaries to determine if there are cytological differences between a flower having five and one having seven pistils; but so far the work has not been successful. Seed was collected from a plant having a constant number of six pistils and pollination will be controlled when the seedlings mature to try to determine if the difference in pistil number is heritable.

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